



SUGGESTIONS FOR

# Setting Tile

As Officially Compiled by the  
manufacturers of the  
United States of America.

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ANS. ....  
MARBLE & TILE CO

The "Suggestions for Setting Tile" contained in the following pages are made for the purpose of improving tile work and bringing the standard up to a more uniform basis, giving to those in sections of the country where tile is not in general use the necessary information to secure first class work, thereby creating an increased demand.

By following these "Suggestions" the manufacturers of tile can guarantee first class and satisfactory work, as the details have been most carefully prepared.

The principal object in laying this matter before those interested in perfect tile work is to point out the proper method of insuring, in a short time, as large a consumption of tile as we now find in foreign countries, as the tile industry of this country, when compared with European countries, is in its infancy.

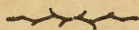
Trusting that all will appreciate the good intentions of these "Suggestions," and preserve them for future reference, we remain,

Most respectfully,

THE TILE MANUFACTURERS OF THE U. S.



# Suggestions for Setting Tile.



## Foundations.

A good foundation is always necessary, and should be both solid and perfectly level. Tile should always be laid upon a concrete foundation, prepared from the best quality Portland cement and clean sharp sand and gravel, or other hard material. (CINDERS SHOULD NEVER BE USED, AS THEY HAVE A TENDENCY TO DESTROY THE LIFE OF THE CEMENT AND CAUSE IT TO DIS-INTEGRATE.) A foundation, however, may also be formed of brick or hollow tile imbedded solidly in, and covered with cement mortar. Concrete should be allowed to thoroughly harden before laying the floor, and should be well soaked with water before laying the tile.

LIME MORTAR should never be mixed with concreting.

CONCRETE should consist of

One part Portland cement,  
Two parts clean sharp sand,  
Two parts clean gravel,

and thoroughly mixed with sufficient water to form a hard, solid mass when well beaten down into a bed, which should be from  $2\frac{1}{2}$  inches to 3 inches thick.

If the concrete bed can be made *over three inches in thickness*, the concrete can then be made of

One part Louisville cement,  
One part clean sharp sand,  
One part clean gravel,

and thoroughly mixed with sufficient water as above directed.

FOR FLOORS, the surface of the concrete must be level and finished to within one (1) inch of the finished floor line, when tile  $\frac{1}{2}$  inch thick is used, which will leave a space of  $\frac{1}{2}$  inch for cement mortar, composed of equal



parts of the very best quality Portland cement and clean sharp sand. The distance below the surface of the finished floor line, however, should be governed by the thickness of the tile.

**FOR WOOD FLOORS.** When tiles are to be laid on wood flooring in new buildings, the joists should be set five inches below the intended finished floor line and spaced about 12 inches apart and thoroughly bridged, so as to make a stiff floor, and covered with one inch rough boards not over six inches wide (boards three inches wide preferred,) and *thoroughly nailed*, and the joints  $\frac{1}{8}$  inch apart to allow for swelling. (See Figure 1.) (A layer of heavy tar paper on top of wood flooring will protect the boards from the moisture of the concrete, and will also prevent any moisture from dripping through to a ceiling below.)

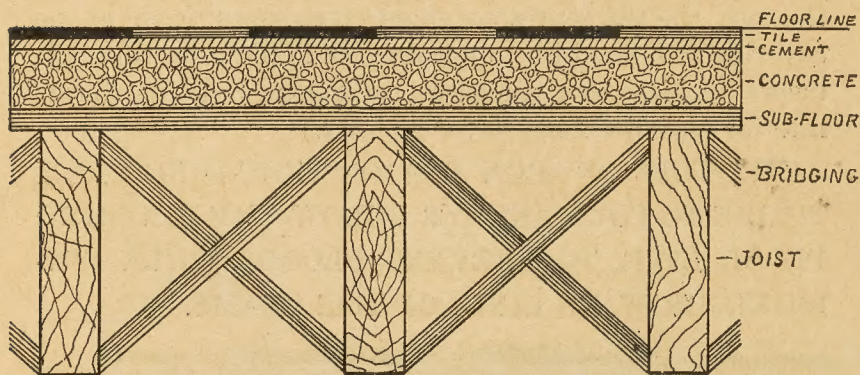


FIG. 1.

**IN OLD BUILDINGS.** Cleats are nailed to joists five inches below the intended finished floor line, and short pieces of boards  $\frac{1}{8}$  inch apart fitted in between the joists upon the cleats and well nailed, and the joists thoroughly bridged. The corners on the upper edge of the joists should be chamfered off to a sharp point (see Figure 2), as the flat surface of the joists will give an uneven foundation. When the strength of the joists will permit, it is best to cut an inch or more off the top. (Where joists are too weak, strengthen by thoroughly nailing cleats six inches wide full length of joists.) When the solid wood foundation is thus prepared, concrete is placed upon it as above directed.



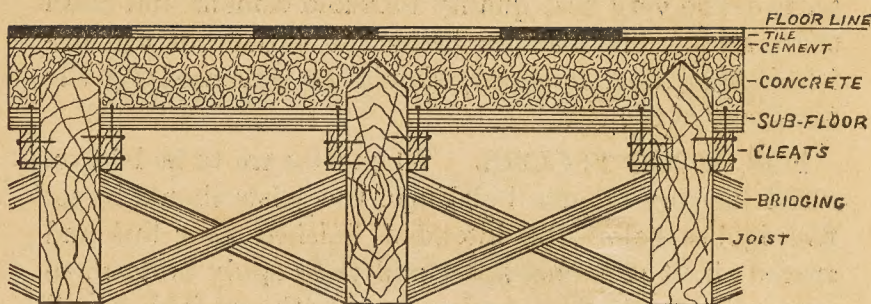


FIG. 2.

**WHERE STEEL BEAMS** and hollow tile arches are used, frequently very little space is left for preparing a proper foundation for setting tile, as the rough coating is usually put in by the hollow tile contractor to protect his work, but this covering should always conform to the requirements for a solid tile foundation. Should this not be the case, the tile contractor should remove sufficient of the covering to allow him to put down a foundation that will insure a satisfactory tile floor. (Cinders, lime, mortar or inferior material must never be used.)

THE TOPS OF IRON BEAMS SHOULD BE FROM THREE TO FOUR INCHES BELOW THE FINISHED FLOOR LINE, TO PREVENT FLOORS WHEN FINISHED SHOWING LINES OF THE BEAMS.

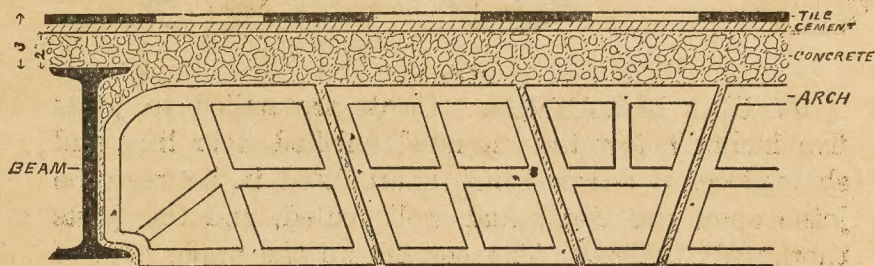


FIG. 3.

**FOR HEARTHES.** The foundation for hearths should be placed upon a brick arch, if possible, to insure perfect fire protection, and then covered with concrete in the same manner as directed for tile floors. If placed upon a sub-foundation of wood, the concreting should be at least six inches thick. (See Figures 4 and 5.)



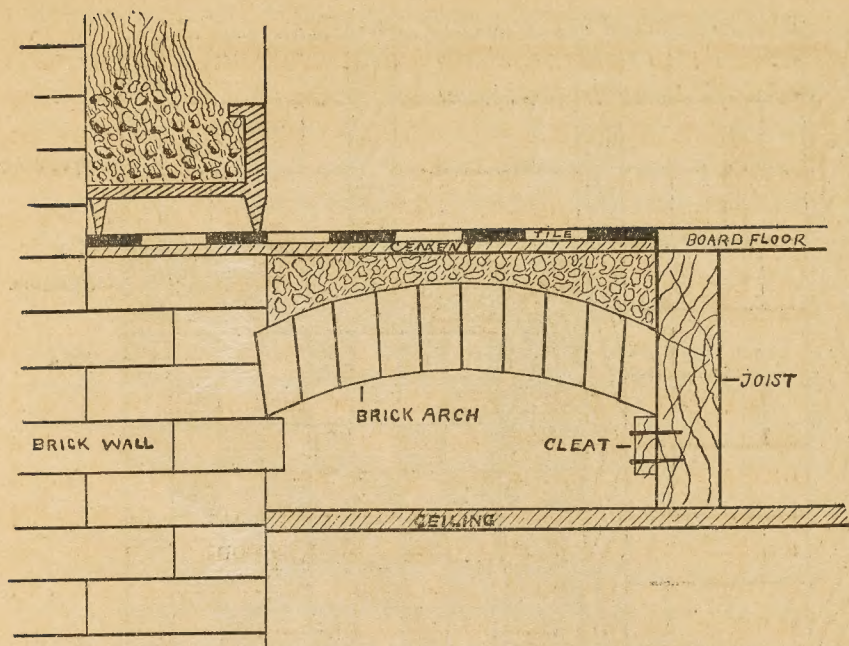


FIG. 4.

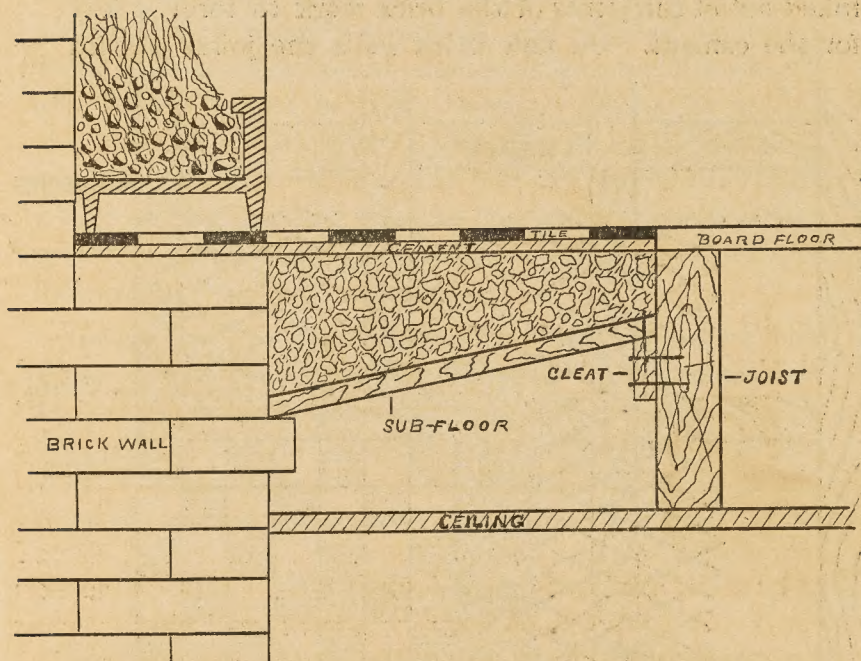


FIG. 5.

**FOR WALLS.** When tiles are to be laid on old brick walls the plaster must be all removed and the mortar



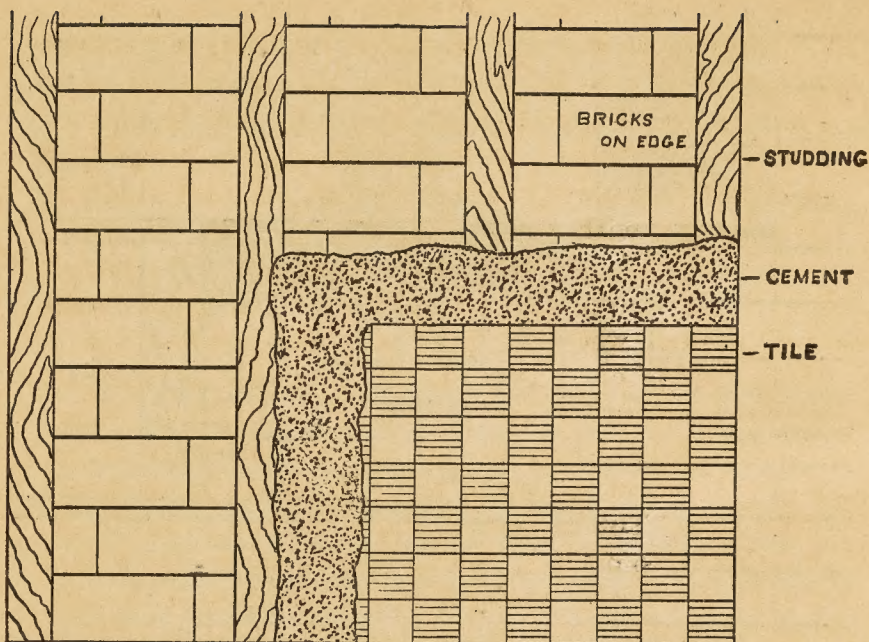


FIG. 6.

raked out of the joints of the brick work to form a key for the cement. On new brick walls the joints should

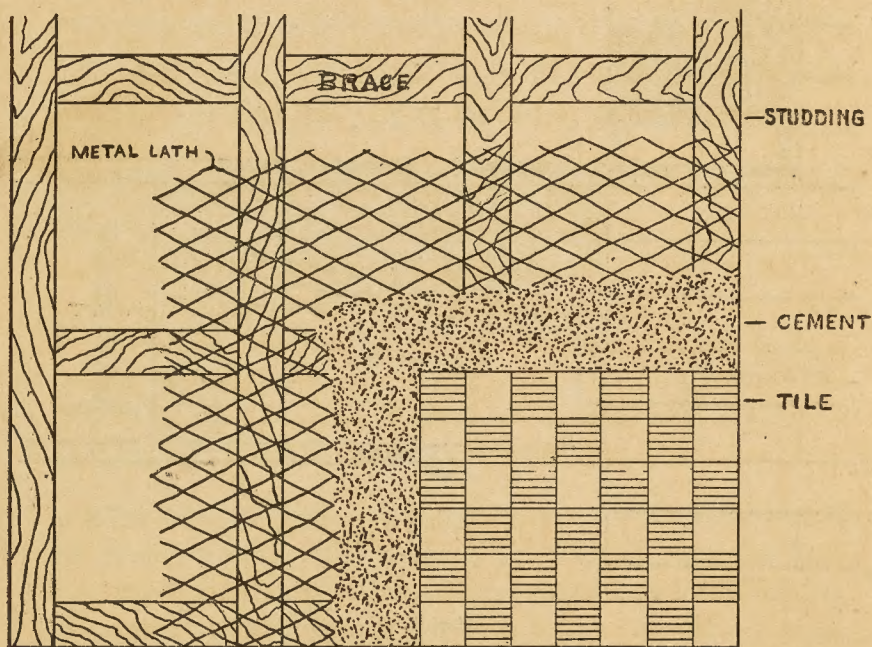


FIG. 7.



not be pointed. When tiles are to be placed on studding, the studding should be well braced by filling in between the studding with brick set in mortar to the height of tile work (See Figure 6) ; or brick work may be omitted and extra studding put in and thoroughly bridged, so as to have as little spring as possible, and this studding then covered with sheet metal lathing. (See Figure 7.) (TILE MUST NEVER BE PLACED ON WOOD LATH OR ON OLD PLASTER.) The brick walls must be well wet with water and then covered with a rough coating of cement mortar, composed of one part Portland cement and two parts clean sharp sand. When tiles are placed on metal lathing, hair should be mixed with the cement mortar to make it adhere more closely to the lath. The cement mortar should be  $\frac{1}{2}$  inch thick, or sufficient to make an even and true surface to within one (1) inch of the intended finished surface of the tile, when tile  $\frac{1}{2}$  inch thick is used, which will allow a space of  $\frac{1}{2}$  inch for the cement mortar, composed as above for rough coating the walls. The face of the cement foundation should be roughly scratched, and allowed to harden for at least one day before commencing to lay the tile. If any lime is mixed with the cement mortar for setting the tiles, *it should never exceed 10 per cent.*, and great care must be used to have the *lime well slacked*, and made free from all lumps by running through a coarse seive, in order to guard against "heaving" or "swelling," and thus loosening or "lifting" the tiles.

IMPORTANT.—The foundation for both floor and wall tiling should be thoroughly brushed, to remove all dust and small particles adhering to it, and then well wet before putting on the cement mortar. To insure a perfect bond it is best to coat the foundation by brushing over it pure cement mixed in water.

## Materials.

**CEMENT.** The very best quality of Portland cement should always be used for setting either floor or wall tile and for grouting the floors, and the very best quality of Keene's Imported Cement for filling the joints in the wall tiling.



**SAND.** Clean sharp grit sand, free from all salt, loam or other matter, and perfectly screened before mixing with the cement, should always be used.

**MORTAR.** For floor or vitreous tiles, should be composed of equal parts of cement and sand, and for wall tiles one (1) part of cement and two (2) parts sand. The mortar should not be too wet, but should be rather stiff, and should always be used fresh; as mortar, when allowed to set before using, loses a portion of its strength.

**SOAKING.** Tiles must always be thoroughly soaked in water before setting, which makes the cement unite to the tiles.

## Setting.

**THE TILES FOR THE FLOORS** are first laid out to ascertain if they are all right and compared with the plan provided for laying the floors. Strips are then set, beginning at one end of and in the center of the room, and

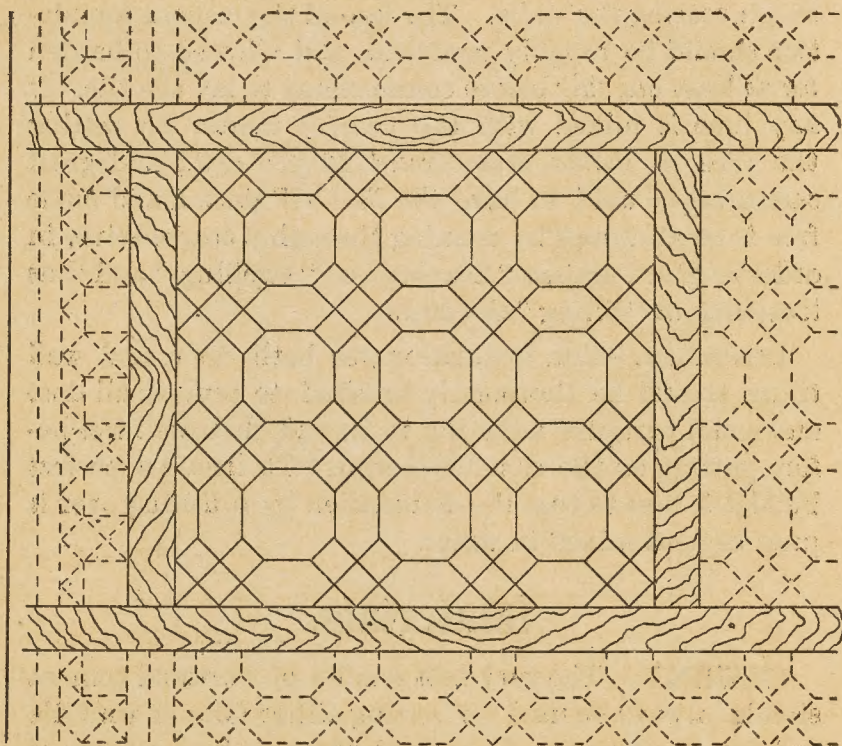


FIG. 8.



level with the intended finished floor line. Two sets of guide strips running parallel about 18 to 30 inches apart should be set first. (See Figure 8.) The mortar is then spread between them for about six to ten feet at a time, and leveled with a screed notched at each end, to allow for the thickness of the tiles. The tiles are

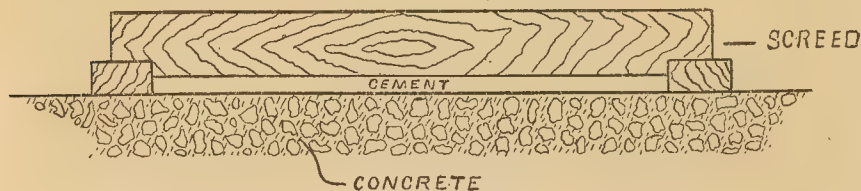


FIG. 9.

placed upon the mortar, which must be stiff enough to prevent the mortar from working up between the joints. The tiles are to be firmly pressed into the mortar and tamped down with a block and hammer until they are exactly level with the strips. When the space between the strips is completed, the strips on one side of the tile is moved out 18 to 30 inches and placed in proper position for laying another section of tile, using the tiles which have been laid for one end of the screed, and the laying of the tile continued in the same manner until the floor is finished. When the cement is sufficiently set, which should be in about two days, the floor should be well scrubbed with clean water and a broom, and the joints thoroughly grouted with pure cement (mixed with water to the consistency of cream). As soon as this begins to stiffen, it must be carefully rubbed off with sawdust or fine shavings and the floor left perfectly clean.

**CERAMICS.** The foundation and cement mortar for ceramics are the same as for plain or vitreous floors, and the guide strips used in the same manner. The cement mortar is then spread evenly and the tile sheets laid carefully on it with the paper side up. After the batch is covered, the tile setter should commence to press the tile into the mortar, gently at first, firmly afterwards, using block and hammer; thus leveling the tile as correctly as possible. The tile should be beaten down until the mor-



tar is visible in the joints through the paper, however, without breaking it. The paper is then moistened, and after it is well soaked and can be easily removed, it is pulled off backwards, starting from a corner. After removing the paper, the tile should be sprinkled with white sand before finishing the beating, so that the tiles will not adhere to the beater, owing to the paste which is used in mounting them. Corrections of the surface are then made by leveling it with block and hammer. The filling of the joints and cleaning of the surface is a delicate operation, as the looks of this work depends largely upon it. The joints are to be filled with clean Portland cement mixed with water. This mixture is forced into the joints with a flat trowel (not with a broom, which often scrapes out the joints). After the joints are filled, the surplus cement is removed from the surface by drawing a wet piece of canton flannel over it. This piece of cloth must be washed out frequently with clean water. After the floor is cleaned, it should be allowed to stand

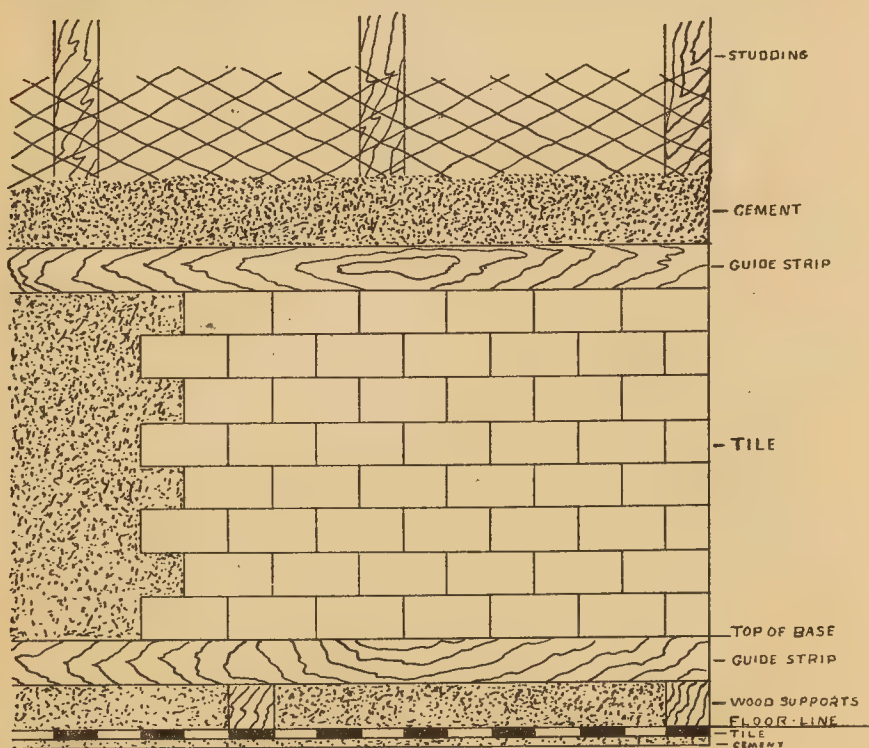


Fig. 10.



for a day or two, when the whole floor is to be rubbed with sharp sand and a board of soft lumber. This treatment, which removes the last traces of cement, is preferable to the washing off with an acid solution, as it will not attack the cement in the joints. In laying the tile sheets on the cement, care should be taken to have the width of joints spaced the same as the tile on the sheets to prevent the floor having a block appearance.

**THE TILES FOR THE WALLS OR WAINSCOTING** are first laid out and compared with the plan provided for setting them. Guide strips are then placed on the wall parallel and about two feet apart, the bottom one being so arranged to allow the base to be set after the body is in place. (See Figure 10.) When a cove base is used it may be necessary to set it first, but in all cases must be well supported on the concrete. (See Figure 11.) The strips must be placed plumb and even with the intended finished wall line.

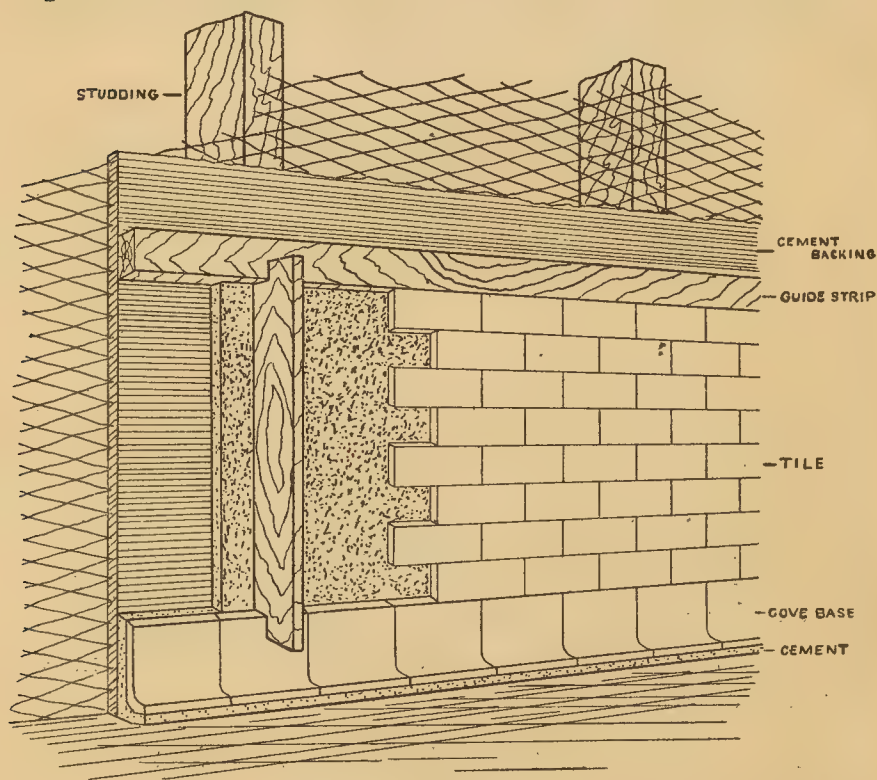


FIG. II.



The method of setting wall tile is governed to some extent by the conditions of the wall on which they are to be set, and must be decided by the mechanic at the time, which process he will use, whether buttering or floating, as equally good work can be done by either, by following the instructions as stated below.

**FLOATING WALL TILE.** The mortar is spread between the guide strips for about five feet at a time and leveled with a screed notched at each end to allow for the thickness of the tile. (See Fig. 9.) The tiles are placed in position and tamped until they are firmly united to the cement and level with the strips. When the space between the strips is completed, which should be one side of the room, the strips are removed and the work continued in the same manner until completed. When the tiles are all set, the joints must be carefully washed out and neatly filled with thinly mixed pure Keene's Cement, and all cement remaining on the tile carefully wiped off.

**BUTTERING WALL TILES.** The cement mortar is spread on the back of each tile, and the tile placed on the wall, and tapped gently until firmly united to the wall and plumb with the guide strips. When the tiles are all set, the joints must be carefully washed out and filled with Keene's cement, and the tiles cleaned as directed above.

**WHEN FIXTURES** of any kind are to be placed on the tile work, such as plumbing in bath room, provision should be made for them by fastening wood strips on the wall before the rough or first coating of cement mortar is put on, the strips to be the same thickness as the rough coating. The tiles can be placed over the strips by covering them with cement mortar, and when thoroughly set, holes can be bored in the tiles for fastening the fixtures without injuring the tiling.

**HEARTH AND FACING TILE** are set in the same manner as for floors and walls.



## Cleaning.

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It is absolutely necessary to remove with sawdust, and afterwards with a flannel cloth and water, all traces of cement which may have been left on the surface of the tile, as it is hard to remove after it is set.

After thoroughly cleaning the floor, it should be covered with sawdust and boards placed on the floor for several days where there is walking upon it.

A white scum sometimes appears on the surface of the tile, caused by the cement. This can generally be removed by washing frequently with plenty of soap and water. If this does not remove it, then use a weak solution of 15 parts muratic acid and 85 parts water, which should only be allowed to remain on the tile for a few minutes, and then thoroughly washed off.

## Cutting of Tile.

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When it is found necessary to cut tile the following directions are given :

**TOOLS.** The chisels used should be made of the best tool steel, and should always be sharp. They should be of small size, the edge not being wider than one-fourth inch. The hammer should be light, weighing about six ounces, having a slender handle. After the exact shape of the tile has been determined, lines should be drawn on the surface of the tile with a lead pencil, giving the exact direction of the cut desired. This line should be followed with the chisel, which is held at right angles with the surface, the hammer giving the chisel sharp decisive raps. After the line has been repeatedly traversed with the chisel, a few sharp blows against the back of the tile opposite the mark on the face will break it at the place thus marked.



14- pos 10 ft long  
 4 " 6 " "

To cut glazed or enamel tiles, they should be scratched on the surface with a tool at the place where it is desired to break them, and then gently tapped on the back opposite the scratch.

CAUTION should be used not to allow any one to walk upon or carry anything heavy over the floor, or have any pounding about wall work for several days, or until the tiles are firmly set. Unless these precautions are taken it will be impossible to guarantee a first-class job. Tile work is frequently condemned when the fault lies with the rush of other contractors to finish their work.

6  
 1-6  
 1-10  
 8-7

## General Information.

Concrete.  $\left\{ \begin{array}{l} 1 \text{ part Portland Cement,} \\ 2 \text{ parts sharp sand,} \\ 2 \text{ parts clean gravel.} \end{array} \right\} \begin{array}{l} 1 \text{ sq. ft.} \\ 3'' \text{ thick.} \end{array} \left. \vphantom{\begin{array}{l} 1 \text{ sq. ft.} \\ 3'' \text{ thick.} \end{array}} \right\} \text{Weighs, 33 lbs.}$

Cement Mortar.  $\left\{ \begin{array}{l} 1 \text{ part Portland Cement.} \\ 1 \text{ part sharp sand.} \end{array} \right\} \begin{array}{l} 1 \text{ sq. ft.} \\ \frac{1}{2}'' \text{ thick.} \end{array} \left. \vphantom{\begin{array}{l} 1 \text{ sq. ft.} \\ \frac{1}{2}'' \text{ thick.} \end{array}} \right\} \text{Weighs, } 6\frac{1}{2} \text{ lbs.}$

Tile. White Vitreous,  $\left\{ \begin{array}{l} 1 \text{ sq. ft.} \\ \frac{1}{2}'' \text{ thick,} \end{array} \right\} \text{Weighs, 6 lbs.}$

Total weight of 1 sq. ft. of floor and foundation weighs 45½ pounds.

12 inch joists, 12 inch center to center, 16 ft. limit of span.

10 inch joists, 12 inch center to center, 12 ft. limit of span.

8 inch joists, 12 inch center to center, 8 ft. limit of span.

When longer spans are used with these sizes, they should be supported with girder and post.







